



Circular Economy – a look from a Finance perspective

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01 | Why circular?



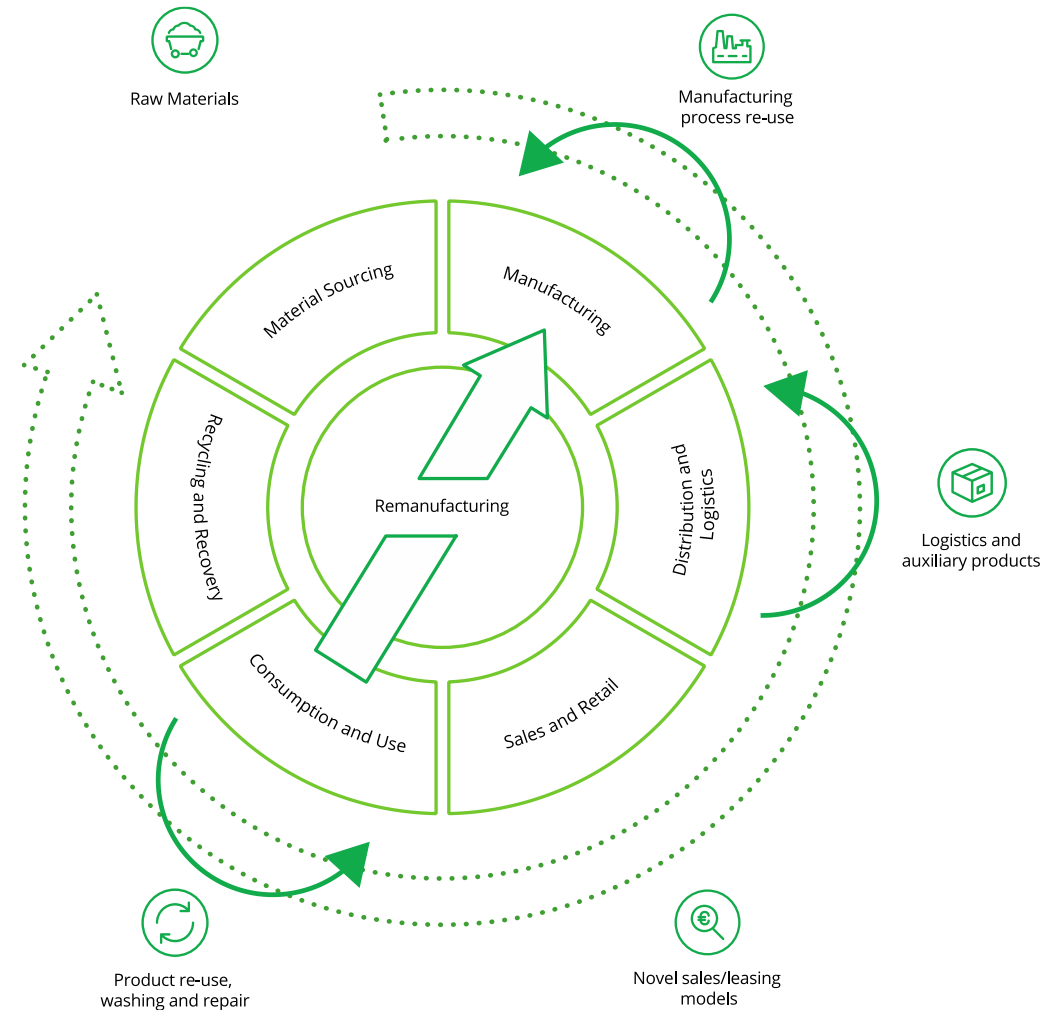
What is Circular Economy?

Rather than discard assets after a single product cycle, companies are developing ways to continually reintroduce these assets into the market

Attributes of the circular economy

A circular economy goes **beyond** simply **preventing and reducing waste** to inspiring technological, organizational and social innovation across and within value chains.¹

- A circular economy is **restorative and regenerative** by design – it is about optimizing how we use valuable resources, not just preventing residual waste.
- It is a **continuous cycle of positive development** that preserves and enhances natural capital, optimizes resources yields and minimizes system risks by managing **finite stocks and renewables flows**.
- Opportunities to add value include **process improvements, new business models and design principles** (reuse, remanufacture, etc.).
- It offers **inherent social benefits** for the consumer, bringing down product costs, costs of ownership and the rate of repurchase.



Megatrend Circular Economy

Why does it matter to finance?

Starting point

Green Deal: To reach net greenhouse gas neutrality **by 2050** across the EU, companies need to reduce their carbon footprints and make their own operations climate neutral.

Capture value from downstream vertical integration and **reduce dependency** on global supply chains by closing the loop.

Implementing circular business practices could **save up to 45% of carbon emissions and 90% of material waste.**



Circular Economy themes

Value recovery

Finite resources and space

Supply security and rising material costs

Changing societal values

Legislative pressure and financial benefits

Finance for a circular economy



The Role of Finance



Strategic business case logic



Supply chain oversight



IT infrastructure for oversight



Extended finance data model



Monitoring of new business models

Source: Deloitte Research; Ellen MacArthur Foundation

Circular economy trends in the automotive sector

Key opportunities and imperatives in the industry drive demand for holistic lifecycle management and circular economy initiatives



Industry dynamics

- **Customer expectations** for sustainability on the rise
- Need for **secure and ethical sourcing** of critical materials
- Increasing focus on **ESG performance** among investors and other stakeholders
- Circular economy initiatives **at competitor companies** raise the bar (BMW i Vision Circular concept for 2040)



The circular economy is essential to secure the supply chain.

Pilot and monitor material and supplier risks e.g., criticality assessment tool for metals

Secure access to raw materials e.g., recycled plastics and active materials in batteries



Regulatory dynamics

- **End-of-life vehicles:** recycling, recovery and reuse rates (85% or 95%)
- **Recycling efficiencies** for batteries, e.g., 75% for nickel-cadmium batteries
- Minimum **recycling rates** for packaging waste by 2025/2030, e.g., plastic 50% (55%)
- **CO₂ emission standards:** all new car registrations zero-emission by 2035



The circular economy is the only way to reach Scope 3 decarbonization.

Focus on most carbon-intensive commodities e.g., aluminium, steel

Identify new, less-carbon intensive materials e.g., plastics, electronics, batteries



Business opportunities

- Build new **revenue streams**
- **Differentiate**, enhance brand equity and increase residual value by keeping customers “in the brand”
- Avoid CO₂ **penalties** (~ €95 per exceeded gram times the number of vehicles sold in that year)
- **Recapture share of value** from lifecycle activities



The circular economy helps capture residual value.

Second-life initiatives e.g., batteries for energy storage

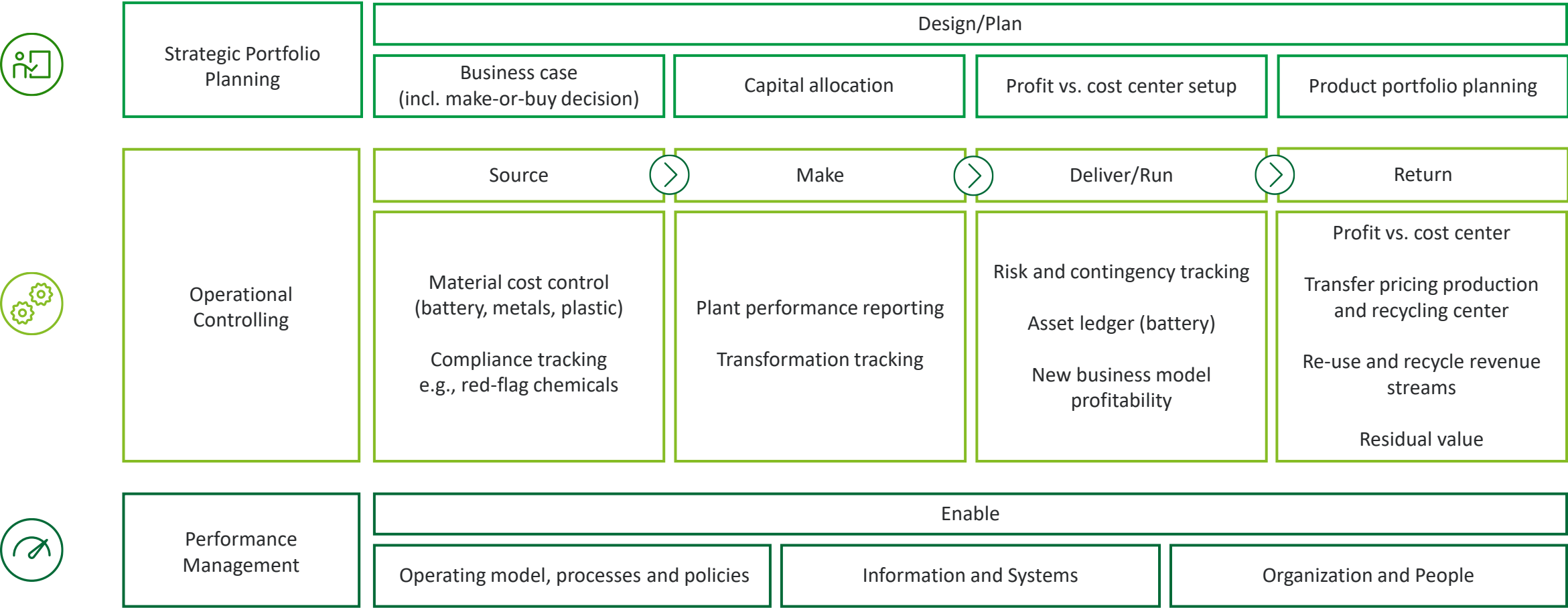
Repair (remanufacturing) activities e.g., battery repair shop

02 | CE Implementation



Finance interactions along the supply chain

Finance expertise is required in three major areas and is vital to ensure circular economy requirements are integrated into today’s finance operations and steering models. Issues relevant to finance are categorized using the SCOR model.



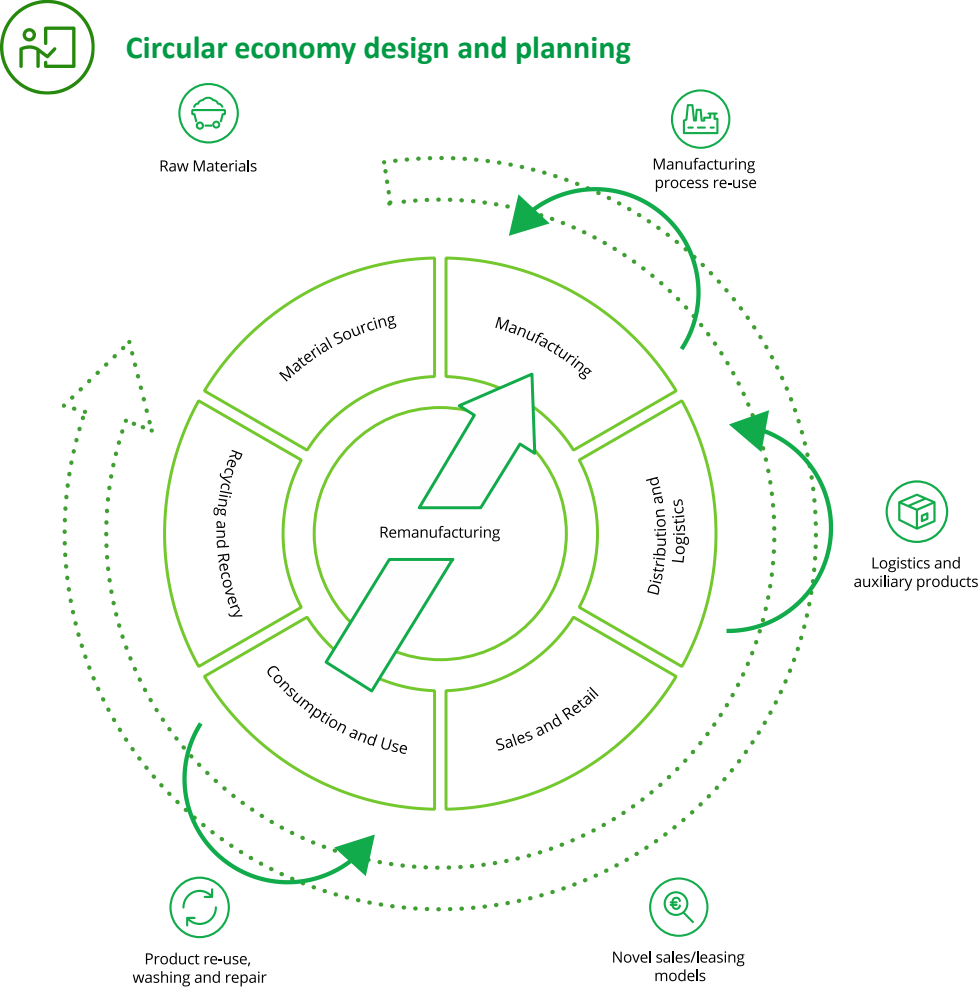
Source: APICS, Inc. (2022) (<https://scor.ascm.org/processes/introduction>)

03 | Deep Dive



Planning and designing a company's circular economy strategy

Finance departments provide guidance and governance, mandate capital allocation and determine the financial, strategic and operational measures for the circular economy operating model



Business Case

- Make-or-buy decision
- Launch of reuse and recycle processes



Profit center vs. cost center

- Market demands for secondary materials
- Material intensity



Product portfolio planning and calculation

- Market demands for secondary materials
- Material intensity



Supply chain planning

- Alternative business models, material ownership and recollection schemes
- Ecosystem interactions



Design to recyclability

- Complexity of disassembly and degree of standardization (parts)
- Full lifecycle view and total cost of ownership



Client Example Automotive



Situation

- Client needs a sustainable industrial ecosystem to move from production feasibility to a CE hub.
- Finance brought on board to update projections for strategic product portfolio and achieve consistent results across CE stream: "renew", "reman", "repower" and "resource".



Approach and scope

- Integrated budget planning for product portfolio to forecast and simulate the impact of product development decisions
- Standardized calculation of product profitability, consistent budget assumptions and integrated database
- Product profitability calculation interlinked with CO₂e steering tools for vehicle and product projects



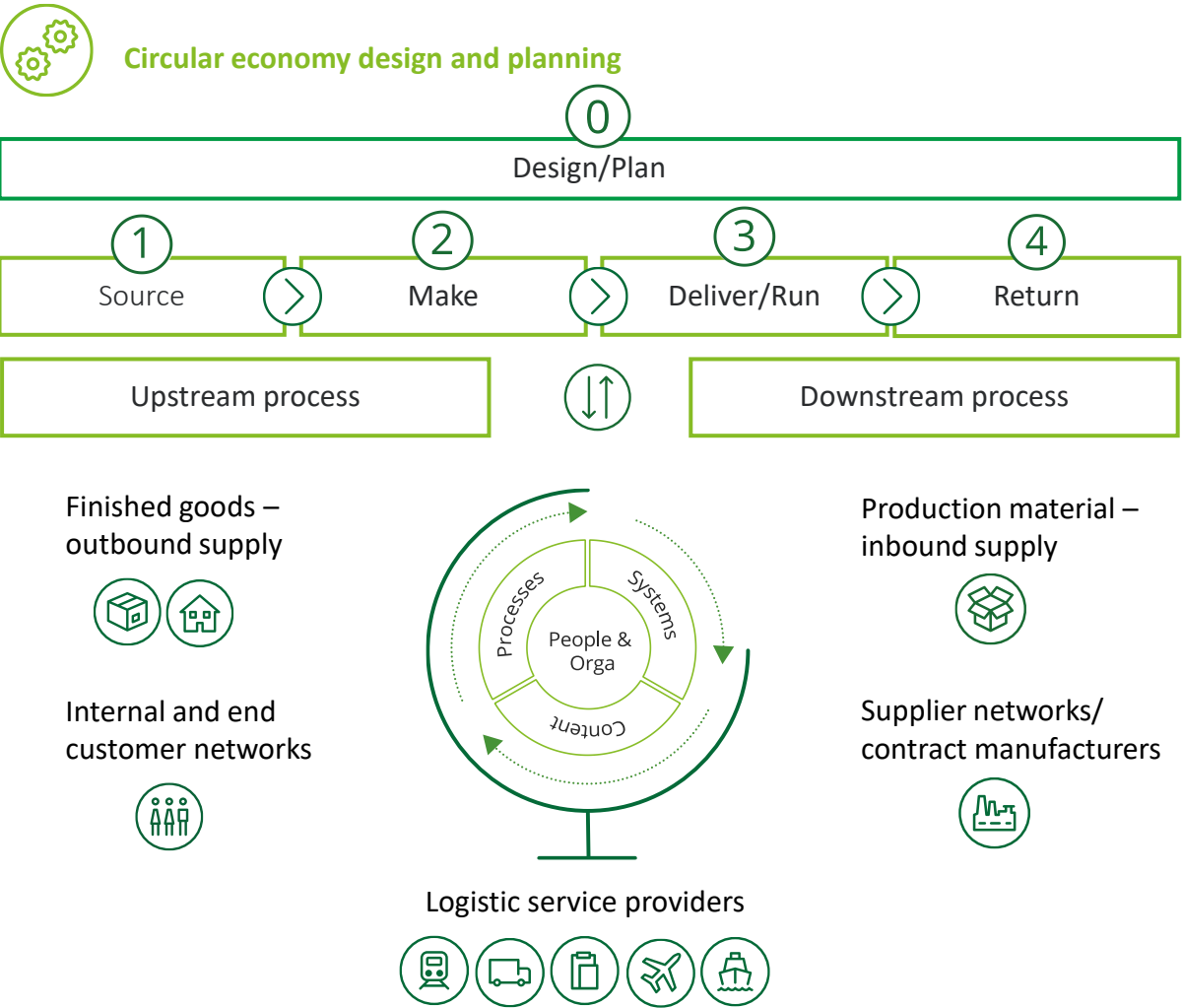
Value delivered and impact

- Standardized calculation of product profitability to make vehicle-specific budget parameters available
- Concept for CO₂e reporting and simulation
- Improved portfolio simulation using advanced analytics and expanded functionality



Source, Make, Deliver, Run and Return

From material cost control to prediction of residual value – it is the finance department’s role to monitor revenue streams by adjusting parameters to account for changes in the price of recycled and refurbished materials



Circular economy design and planning

- 0
 - S&OP planning
 - Inventory management
- 1
 - Material cost control
 - Compliance tracking
 - Variance tracking
- 2
 - Plant performance reporting
 - Transformation tracking
- 3
 - Risk and contingency tracking
 - Asset ledger
- 4
 - Profit center vs. cost center
 - Transfer pricing (production and recycling service center)
 - Predictions of residual value in revenue streams (recycling, reuse/refurbishment revenue)



Client Example Consumer Business Industry



Situation

- Client lacks transparency and comparability in production cost oversight across the value chain and wants return and recycling options.



Approach and scope

- Defining joint strategic ambitions and priorities, while also aligning the target picture and vision
- Structuring the standardized cost calculation and cost component scheme with uniform master data
- Defining oversight strategy for supply chain costs and determining technical feasibility of ERP settings



Value delivered and impact

- Streamlined processes as the basis for S/4HANA implementation
- Increased transparency and more effective steering of production profitability
- Benchmarking and cost comparability across business units



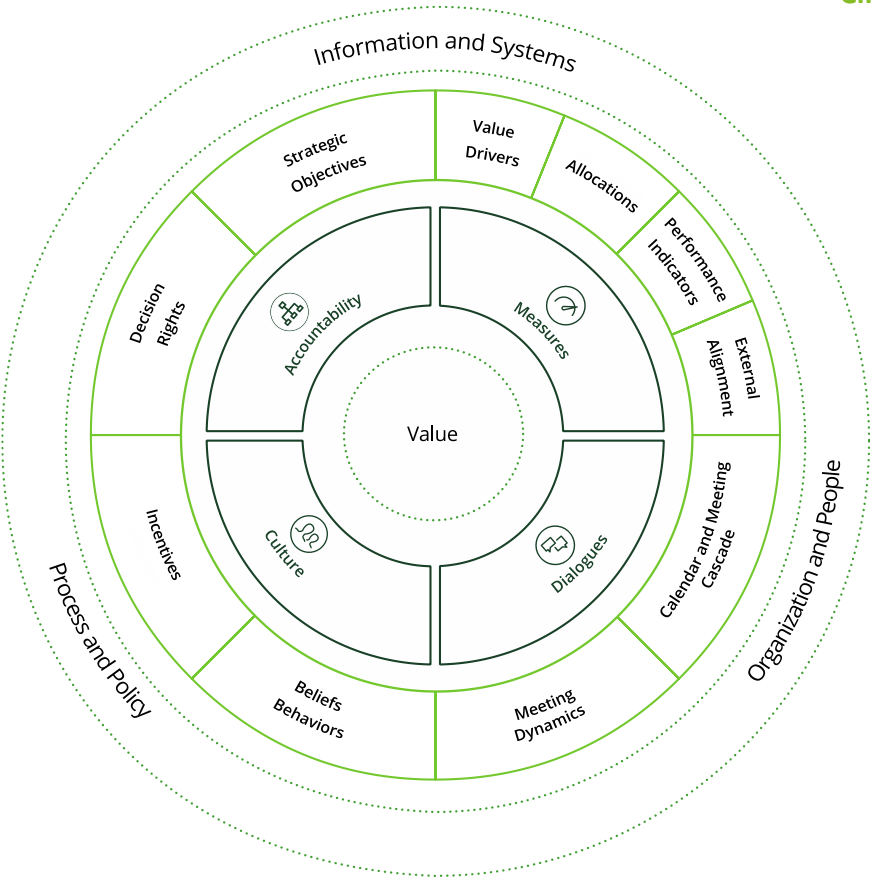
Getting finance departments ready for the circular economy

Finance needs to align its steering model and prepare enablers like the operating model, data and systems, as well as upskilling staff, to address the new requirements of a circular value chain.

Operating Model and Performance Management

Key Finance areas

-  **Situation**
Key value drivers and steering focus of business units (e.g., profitable growth, cost efficiency, asset efficiency) along the circular value chain
-  **Accountabilities**
Accountability for elements of the CE value chain aligned to steering focus and planning and reporting events
-  **Behavioral changes**
Recycling quotas and internalizing, incentivizing and allocating emissions to steering objects/products
-  **Performance dialogues**
More focus on enterprise-wide alignment and collaboration in order to facilitate knowledge exchange and drive innovation



Circular Economy enabler (selective)

- Processes and policy**
Set up operational procedures and governance for re-use and recycling processes including external partners and ecosystems
- Information and systems**
Generate data across the ecosystem, build analysis and monitoring skills, create digital product passports
- Organization and people**
Evaluate key changes and build the required skillsets/capacity for future talent management
- Sustainable financing and pricing**
Manage access to funding and subsidies, create pricing and subscription models to promote circularity



Client Example Shipping



Situation

- To achieve their strategic ambitions and meet regulatory requirements, the client needs an enterprise-wide sustainability strategy



Approach and scope

- Providing insight into regulatory requirements and identifying improvement opportunities
- Defining agreed actions for strategic ambitions as well as an aligned target picture and vision
- Defining KPI catalog to meet external requirements, strategic priorities and ESG performance metrics



Value delivered and impact

- Transparency on regulatory requirements for future-proof ESG performance management
- Appropriate ambition levels for all ESG action areas (including decarbonization and the circular economy)
- ESG KPI pilot as a blueprint for more comprehensive ESG KPI reporting and management in the future

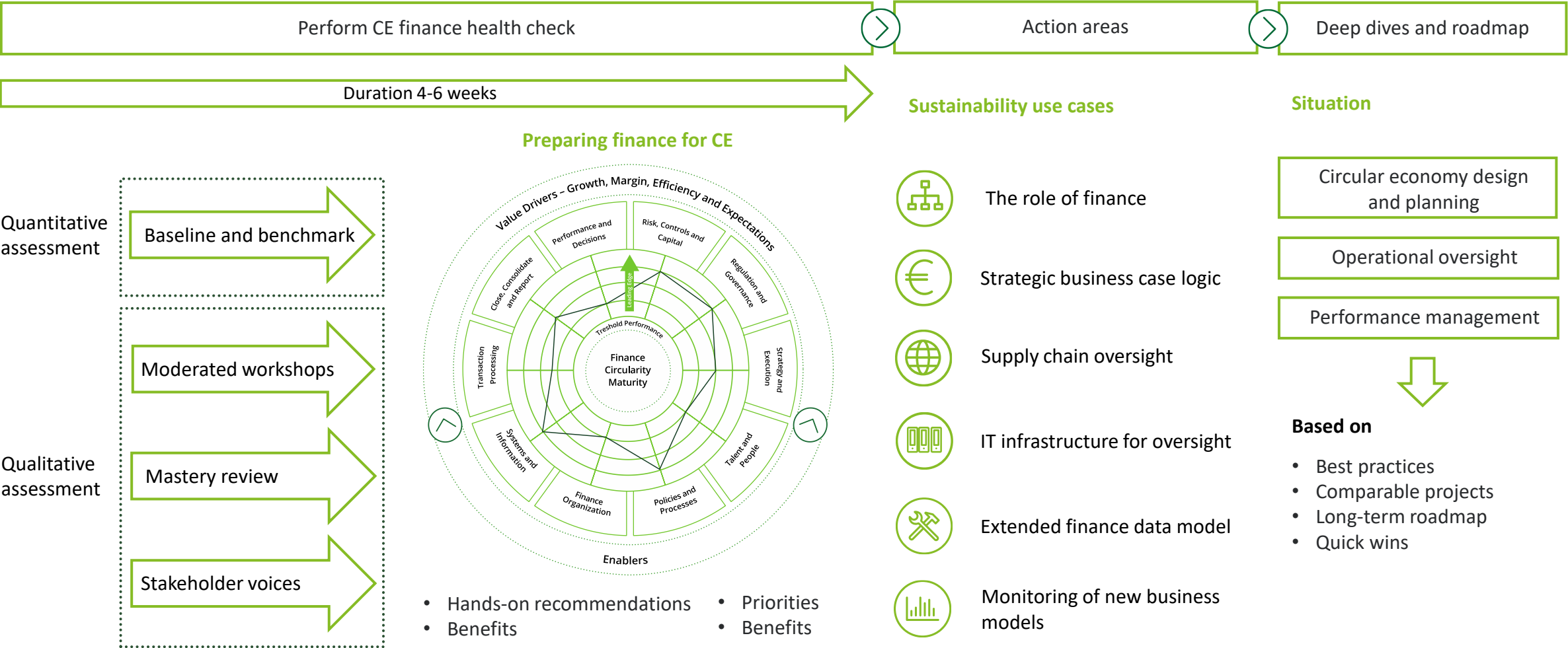


04 | What's next?



Our roadmap for a circular economy strategy

The fit-gap analysis provides the basis for your roadmap. Tracking CE initiatives ensures the roadmap is strategically aligned with the overall sustainability strategy.



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